

WHAT IS CLAIMED IS:

1. A surface acoustic wave device comprising:  
a surface acoustic wave element having a piezoelectric substrate, at least one interdigital electrode transducer disposed on the piezoelectric substrate, and at least one reflector disposed on the piezoelectric substrate;  
a package having the surface acoustic wave element mounted therein and electrode lands electrically connected to the surface acoustic wave element; and  
a plurality of bonding wires electrically connecting the surface acoustic wave element to the electrode lands of the package, wherein the bonding wires are arranged so as not to pass over both of the at least one interdigital electrode transducer and the at least one reflector of the surface acoustic wave element.
2. A surface acoustic wave device according to Claim 1, wherein the at least one interdigital electrode transducer and the at least one reflector are made of a metal having a heavier mass than that of aluminum or an alloy containing the metal.
3. A surface acoustic wave device according to Claim 1, wherein the piezoelectric substrate is a quartz substrate.

4. A surface acoustic wave device according to Claim 1, wherein the at least one interdigital electrode transducer is made of one of tantalum, Au, W, Mo, Ni, Cu, Co, Cr, Zn, Fe, and Mn.

5. A surface acoustic wave device according to Claim 1, wherein a first plurality of the interdigital electrode transducers are disposed on the piezoelectric substrate along a surface acoustic wave propagation direction, and a first plurality of the reflectors are disposed on both sides, in the surface acoustic wave propagation direction, of an area where the first plurality of the interdigital electrode transducers are disposed, and a second plurality of interdigital electrode transducers are disposed along the surface acoustic wave propagation direction at a location separated in the direction at approximately a right angle to the surface acoustic wave propagation direction, and a second plurality of reflectors disposed on both sides, in the surface acoustic wave propagation direction, of the area where the second plurality of interdigital electrode transducers are provided.

6. A surface acoustic wave device according to Claim 1, further comprising first and second longitudinally coupled resonator type surface acoustic wave filters which are

connected to each other.

7. A communication device comprising at least one surface acoustic wave device, the at least one surface acoustic wave device including:

a surface acoustic wave element having a piezoelectric substrate, at least one interdigital electrode transducer disposed on the piezoelectric substrate, and at least one reflector disposed on the piezoelectric substrate;

a package having the surface acoustic wave element mounted therein and electrode lands electrically connected to the surface acoustic wave element; and

a plurality of bonding wires electrically connecting the surface acoustic wave element to the electrode lands of the package, wherein the bonding wires are arranged so as not to pass over the at least one interdigital electrode transducer and the at least one reflector of the surface acoustic wave element.

8. A communication device according to Claim 7, wherein the at least one interdigital electrode transducer and the at least one reflector are made of a metal having a heavier mass than that of aluminum or an alloy containing the metal.

9. A communication device according to Claim 7,  
wherein the piezoelectric substrate is a quartz substrate.

10. A communication device according to Claim 7,  
wherein the at least one interdigital electrode transducer  
is made of one of tantalum, Au, W, Mo, Ni, Cu, Co, Cr, Zn,  
Fe, and Mn.

11. A communication device according to Claim 7,  
wherein a first plurality of the interdigital electrode  
transducers are disposed on the piezoelectric substrate  
along a surface acoustic wave propagation direction, and a  
first plurality of the reflectors are disposed on both sides,  
in the surface acoustic wave propagation direction, of an  
area where the first plurality of the interdigital electrode  
transducers are disposed, and a second plurality of  
interdigital electrode transducers are disposed along the  
surface acoustic wave propagation direction at a location  
separated in the direction at approximately a right angle to  
the surface acoustic wave propagation direction, and a  
second plurality of reflectors disposed on both sides, in  
the surface acoustic wave propagation direction, of the area  
where the second plurality of interdigital electrode  
transducers are provided.

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12. A communication device according to Claim 7, further comprising first and second longitudinally coupled resonator type surface acoustic wave filters which are connected to each other.

13. A frequency adjustment method of a surface acoustic wave device comprising the steps of:

providing a surface acoustic wave device including a surface acoustic wave element having at least one interdigital electrode transducer and at least one reflector disposed on a piezoelectric substrate, a package having the surface acoustic wave element mounted therein and electrode lands electrically connected to the surface acoustic wave element;

arranging a plurality of bonding wires to electrically connect the surface acoustic wave element to the electrode lands of the package such that the bonding wires do not pass over the at least one interdigital electrode transducer and the at least one reflector of the surface acoustic wave element;

adjusting the frequency of the surface acoustic wave device by etching the at least one interdigital electrode transducer and the at least one reflector by irradiating an energy beam from above.

14. A frequency adjustment method of a surface acoustic wave device according to Claim 13, wherein an ion gun is used in the step of irradiating the energy beam.

15. A frequency adjustment method of a surface acoustic wave device according to Claim 13, wherein an electron gun is used in the step of irradiating the energy beam.